PROBLEMS IN FORESTRY.

HOW TO MANAGE AMERICAN WOODS.

REPORT OF THE CHIEF OF THE DIVISION OF FORESTRY, B. G. FERNOW. Washington. Report of the Commissioner of Agriculture, 1886.

The report of the Chief of the Division of Forestry which has just appeared as a portion of the general report of the Department of Agriculture is a distinct improvement upon the best that has preceded it. Forest statistics proper are dismissed with scant mention. It is true that careful statistical work is necessary in some directions to furnish the basis for an intelligent forest policy on the part of the Government. We only know, for example, in a general way, where the Government timber lands lie, not to speak of their extent and productive value. But so long as the elaborate and costly machinery for securing full and accurate figures is not at command, it seems wise to postpone any effort which would result in mere approximation. An approach toward accuracy was all that could possibly be attained in the earlier researches of this bureau. But the four volumes already published, together with the ninth volume of the tenth census, furnish adequate data for most of the generalizations upon which we are prepared to act. They suffice at least to show how wantonly our forest wealth has been squandered, and demonstrate the necessity of concerted and systematic action by Government and people to arrest this waste. It may be said here that Mr. Fernow's scheme for a Forest Department does not seem altogether feasible in its working details, but it should be added that no better one has yet been presented to the public. The problems to be met in discussing the proper extent of Government control of forests, the conflict between the immediate wants of settlers and the future needs of the community, and in general the adjustment between individual ownership and State Administration—all these, not to speak of the proper policy of Government, State and National, after the limits of their authority are duly settled, involve questions most difficult and delicate—questions which need far more thorough study than they have yet received.

Of the significance of forests in their influence upon climate, soil and water supply, and of their importance in furnishing material essential in every form of human industry, so much has been written in recent years that Mr. Fernow wisely contents himself with a concise summary on these points. The prime value of the report is in the section which treats of the principles of foresty proper, where the writer shows a familiarity with what has been learned from experience in Europe and a certain readiness to adapt these lessons to the different conditions presented in this country. Very plainly, American foresty must differ in detail from European foresty, and, indeed, owing to varied climate, not to speak of varied needs of the people in different parts of the United States, the best forest practice in one State may differ widely from that of another. On part of the Pacific Coast, one may travel for leagues through the finest coniferous timber of the world without finding a stick that would answer for a wagon spoke. Forest management here would certainly differ from what was needed further East in the home of the hard woods. And as the methods of wheat farming in the East would not pay in the Red River Valley, so the forest practice in a densely peopled community, where labor is cheap and every bundle of faggots has its price, would certainly not be adapted to any part of this country at present. Until driven to it by a wood famine Americans will not practise the refinements of foresty, which involve much labor and care, while the harvest is so remote.

Certain broad principles, however, are worth considering as essential in any system or lack of system, and among these is the general superiority of mixed plantations over those consisting of a single species. That there are good reasons for this has long been recognized. It has been the habit of Western planters to fill in the spaces between the more valuable and costly seedlings with cheaper and quickly-growing stuff, so as to keep the ground shaded and subdue the grass and weeds. This inferior growth can be removed as the nobler trees expand and fill the space. Even then the trees that were to remain might be black walnut, white ash or some other one species, so that the plantation would practically be "pure" before it was half grown. In favor of mixed permanent plantations, it has been urged (1) that variety of product to a certain extent is more readily marketable; (2) that one tree species may be supposed to feed more largely on some particular element of the soil, while another species is partial to another element, so that a mixed growth would be more likely to utilize the full productive capacity of the soil; (3) that the roots of one species run near the surface, while those of another may feed more deeply, and therefore it is advisable to mingle trees with dissimilar habits in this respect; (4) that when any species is attacked by injurious fungi or insects their ravages will be more serious in groves composed of this species only than would be the case if other kinds which do not attract and harbor these pests were mingled with the infested species, and (5) that a uniform growth of certain species would receive greater damage from wind or fire. To these considerations Mr. Fernow adds that trees with thin foliage, and which, therefore, do not closely shade the ground or return to it a heavy coat of leaf mould, fail in both these respects to conserve or increase favorable soil conditions, and they should, therefore, be mixed with trees having more dense foliage, and that an undergrowth should be provided of trees and shrubs that thrive under the shadow of the taller species or older ones of the same species.

Mr. Fernow enlarges somewhat upon this thesis, and in his list of important timber trees he attempts to classify them in some degree according to their ability to endure shade. It is to be noted that the trees which are said to be "shade enduring" are also heavily leaved, while the thin-foliaged trees are spoken of interchangeably with "light-needing" trees. There are many exceptions to this rule. The black birch, for example, is called "light-needing," as it is certainly thin-foliaged. But every wanderer through Northern woods must remember how often this tree constitutes a large fraction of the undergrowth, and this ought to give it rank as a "shade-enduring" kind. This capacity for shade varies according to age and situation no doubt, and in a note to the tree catalogue a caution is added that it is a "relative" quality. This, perhaps, explains some apparent contradictions. The white pine, for example, is classed among trees that "do not endure much shade." While in another place it is said by way of illustration: "If by cutting a thin foliaged forest (oak) an existing growth of shade-enduring species (white pine) is given the benefit of increased light, the latter will occupy the ground to the exclusion of the former." The treatment of this subject, owing perhaps to limitation of space, is somewhat confusing in its details—and the chief value of the report as it relates to this subject does not lie in its specific directions. It is the general suggestion, opening a field which so far as we know has not been thoroughly explored, that gives it interest. If it is important to consider the root systems of trees in estimating their influence upon their companions and upon the soil, we may reasonably suppose that the character of the foliage of companion trees can be studied to advantage.

As for the rest, it may be said that the general principles of forestry laid down are sound and plainly stated, although the rules for forest management differ in many points from the methods that have been generally accepted in European schools. The renewal of forests by natural seeding seems better suited to our conditions, where land is cheap and labor dear, than the clearing away of large areas and reproduction by artificial planting. Experience, however, can alone be trusted to settle this point. The value of forest undergrowth is wisely insisted upon, since the contrary doctrine which demands "a clean grove" has been preached persistently by some of our so-called authorities. There is good reason for calling attention to the fact that arboriculture is not all of forestry. The landscape gardener and roadside planter have for their object individual trees or at most a group of trees with chief reference to their appearance. The forester has to do with trees in the aggregate. He is producing a crop, and his aim must be to adopt the best and quickest and cheapest methods for its development while preparing the soil for successive crops in the future. Mr. Fernow regrets that American writers have conceived of forestry mainly as tree planting, or the creation of new forests. No doubt it is of more importance to care for those we have than to establish new ones. It would have been fair to state that this fact has not been entirely overlooked, and it would have been gracious to have added the obvious reason why it has not been more generally insisted on. On the Western prairies there were no forests, and tree-planting was the one thing needed, while in the East until within a few years wood has been so abundant that we have been occupied in clearing it away. There is too much indifference to the future of our forests, but this is no more surprising than the so-called exhaustive methods of agriculture which still prevail in the wheat regions of the West and which are being slowly superseded in the East. The wonder is that with a population ever on the move so great a public interest in forestry has been aroused before the scarcity of timber and the evils that follow the denudation of the highlands where our streams take rise have made themselves felt. Very much has been done in an honest and disinterested way to acquire and diffuse practical knowledge of forest questions, and that an intelligent audience can now be found wherever they are discussed is largely due to the public spirit of the [illegible] in this class. They deserve a more ample recognition than has yet been accorded to them.

"Plant mainly such trees as are indigenous to the climate in which you plant," is a good rule, for it not only excludes in the main foreign species, but forbids, for example, the use in the East of trees from the Pacific slope, where the climate is more dissimilar from our own than is that of Eastern Asia. In another section, however, Mr. Fernow advocates the introduction of the Norway spruce as a timber tree on grounds which are purely theoretical. Whenever a foreign tree has proved its value there should be no hesitation about using it. Western planters, for example, have found the European alder and Scotch pine useful, especially in the early growth of newly planted forest areas. It is not improbable that on the Northwestern plains trees from the great central plateau of Eastern Europe may be made to play an important part in forest economy, for the climates of these two regions are not dissimilar. Reports from California seem to indicate that the English oak may be profitably naturalized there. The tree is of no economical value here, but the climate of Western Europe differs less from that of the Pacific States than from our own. Few foreign trees have been tried here under good forest conditions, but nearly every important European tree has been planted, and a few of them give promise of success. That most of them have failed where our own flourish is the less to be regretted when we consider the wonderful wealth of arborescent forms in our native woods as compared with the limited number of European species.

In the census catalogue 412 species of native trees are named, and some 25 species have since been detected. From these Mr. Fernow makes a "list of 90 of the most important timber trees." The list is called "preliminary," and further study and experience will probably lead to its modification in several particulars. Lawson's cypress, for example, is omitted although it is the most valuable of the whole cupressus tribe, a very important factor in the Pacific lumber supply and one of the most splendid trees in the world. Another tree not mentioned is Pinus Monticola, the most valuable species in the northern interior region, a first-rate timber tree and one that will endure more drouth than any of the white pines. The omission of Fremont's poplar is easier to explain, because it is of more importance for firewood than timber. In Southern California and Arizona, however, the settlers depend upon it largely for fuel, pollarding it every year. Why the three Pacific firs—Abies grandis, A. nobilis and A. Amabilis—are described as "probably" useful in the East hardly appears. How many specimens of A. amabilis are growing east of the Rocky Mountains? This tree was practically lost to cultivation for half a century, being known only by a few European specimens. Half a dozen years ago it was rediscovered by Engelmann and Sargent—and if any of the seedlings they sent home are still living the fact is not generally known. The great silver fir (A. grandis) is a hardy and rapid grower on the Oregon coast, but is tender as a camellia in New-England, and it is questionable whether the red fir (A. nobilis) will be of any use on this side of the continental divide. The Sitka spruce is certainly not hardy in the Northeastern States, and the little experience that has been gained in planting the redwood in the Southern Atlantic States is not encouraging. Pinus ponderosa is recommended for trial on the prairies, but it is the testimony of Robert Douglas, who has tried it repeatedly, that it is invariably carried off by a destructive fungus. Foxtail pine (P. Balfouriana) is recommended for reforesting southern exposures of Western mountains, but this is a slow growing tree and difficult to transplant. For the purpose recommended P. flexilis—a tree of the same location—would seem to be preferable. And why is Pinus mitis noted as the pine of future Southern forestry? It is an excellent tree, but it is practically unknown in the maritime pine belt, reproducing itself only in certain northern parts of the Gulf States. Have we sufficient data for pronouncing P. glabra the most rapid growing pine, or the live oak the most rapid growing and most shade enduring of all the oaks, or the burr oak as more shade enduring than the white oak?

These are a few of the questions suggested by an examination of this list, and many others will be asked before all the information we need is given. Mr. Fernow states that biological studies of several important trees have been undertaken by competent men and monographs on the white pine, the long-leaved Southern pine and the bald cypress have been completed. They may have been printed, but if so the fact is not generally known, nor has the report on Western tree planting, to which Mr. Fernow refers, been very generally distributed. These are documents which should be made available to all who are interested in forestry, and we may add that the subject of this notice ought to be published separately.

Legal Notices.

SUPREME COURT, CITY AND COUNTY OF NEW-YORK.—Minnie H. Butt, plaintiff, against Amanda Guion and others, defendants.—In pursuance of a judgment of foreclosure and sale entered in the above entitled action in the office of the Clerk of the City and County of New-York, on the 20th day of July, 1887, I, the undersigned, the Referee in said judgment named, will sell at public auction at the Real Estate Exchange and Auction Room, Limited, Nos. 59 to 65 Liberty Street, in the City of New-York, on the fifteenth day of September, 1887, at twelve o'clock noon, by Seton & Co., auctioneers, the premises in said judgment described, viz:

All that certain piece or parcel of land situate in the Nineteenth Ward of the City of New-York, and bounded and described as follows: Beginning at a point on the northerly side of East Forty-fifth Street, distant 150 (one hundred and fifty) feet eastwardly from the northeasterly corner of said street and Fifth Avenue, and running thence northwardly and parallel with Fifth Avenue and part of the distance through a party wall 100 (one hundred) feet and 5 (five) inches; thence eastwardly parallel with Forty-fifth Street 25 (twenty-five) feet; thence southwardly parallel with Fifth Avenue, and part of the distance through another party wall, 100 (one hundred) feet and 5 (five) inches to the northerly side of Forty-fifth Street; and thence westwardly along said street 25 (twenty-five) feet to the point or place of beginning. The said premises being now known as Number 5 East Forty-fifth Street, and being the same which were conveyed to the said Amanda Guion by Mary Ann Wright by a deed dated the 13th day of January, 1869, and recorded in the Office of the Register of the City and County of New-York, in Liber 1,086 of Conveyances, at page 146.

Dated New-York, August 22, 1887. C. A. RUNKLE, Referee. John E. Parsons, Plaintiff's Attorney, 111 Broadway, New-York.